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10/759,570	01/20/2004	Takahiko Murata	60188-754	8016

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EXAMINER

CUTLER, ALBERT H

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2622

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/759,570	Applicant(s) MURATA ET AL.	
	Examiner ALBERT H. CUTLER	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,5,12,14-23 and 25-38 is/are pending in the application.
- 4a) Of the above claim(s) 4,12,14,16,17,20,22,25-27 and 31-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5,18,19,21,23,28-30 and 35-38 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is responsive to communication filed on March 26, 2009 and December 4, 2008. Claims 4, 5, 12, 14-23 and 25-38 are pending in the application.

Election/Restrictions

2. Applicant's election without traverse of Species II, claims 5, 15, 18, 19, 21, 23, 28-30 and 35-38 in the reply filed on March 26, 2009 is acknowledged. The elected claims have been examined by the Examiner.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 4, 2008 has been entered.

Response to Arguments

4. Applicant's arguments with respect to claims 5, 15, 18, 19, 21, 23, 28-30 and 35-38 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

5. Claim 15 is objected to because of the following informalities: Lack of clarity and precision.

6. Claim 15 recites "**each** pixel mixture unit". However a pixel mixture unit has not been previously defined in claim 15 or the parent claim 5. Therefore, the Examiner

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recommends changing claim 15 to read "a pixel mixture unit" or something of similar nature. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 5 recites "a first signal transmission method in which the selection signals are sequentially output to **some** pixels either in the vertical direction or the horizontal direction and a second signal transmission method in which the selection signals are continuously output to **all** pixels having color filter of the same color either in the vertical direction or the horizontal direction". It is unclear whether this recitation is directed toward the entire pixel array or toward a pixel mixture unit of the array. If it is directed toward the entire pixel array, then the "all" should be changed to "some", or something of similarly nature, in order to correspond to the specification. If it is direction toward the pixel mixture, then the "some" should be changed to "all", or something of similarly nature, in order to correspond to the specification.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 5, 18, 19, 23, 28-30 and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Umeda et al. (US 2002/0145669).

Consider claim 5, Umeda et al. teaches:

A solid state imaging apparatus (figures 1 and 22A-22C), comprising:

a plurality of pixels two-dimensionally arranged in a vertical direction and a horizontal direction wherein each of the plurality of pixels has a color filter having a different color from color filters of vertically or horizontally adjacent pixels (See figures 22A-22C); and

a signal output circuit (figures 1 and 23) configured to perform one of two types of operations ("all-pixels output mode" and "sub-sampling mode", figures 23, paragraphs 0169-0171),

wherein the signal output circuit includes:

a shift register (vertical scanning section, 103, figure 1) for sequentially outputting selection signals, which drive each pixel, to all of the plurality of pixels either in a vertical or a horizontal direction (vertical direction, see paragraphs 0122, 0123 and 0148, figure 11B), and

an operation switching circuit (switch circuit, 101e, figure 23) for outputting the selection signals from the shift register to each pixel (The operation switching circuit (101e) controls whether the selection signals are output in an all-pixel output mode or sub-sampling mode, paragraphs 0170 and 0171, figure 23.), the operation switching

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circuit configured to switch between a first signal transmission method (all-pixel output mode) in which the selection signals are sequentially output to some pixels either in the vertical direction (Selection signals are output to all pixels in the vertical direction, figure 22A, paragraphs 0169 and 0171.) and a second signal transmission method (sub-sampling mode) in which the selection signals are continuously output to all pixels having color filters of the same color (i.e. green pixels) either in the vertical direction or the horizontal direction (in the vertical direction, figure 22C, paragraphs 0169 and 0173), and

wherein in both of the first and second signal transmission methods, each of the selection signals of the shift register (103) is output via the operation switching circuit (101e) to a corresponding pixel included in a pixel group arranged in the same direction as the shift register (i.e. a group of all pixels in the vertical direction in the all-pixel output mode and a group of all green pixels in the vertical direction in the sub-sampling mode), such that all pixels in the pixel group receive a selection signal from the shift register (The figures 22A and 22C, paragraphs 0169-0173. The operation switching circuit (101e) causes the shift register to output selection signals to all pixels in the all-pixel output mode and all green pixels in the sub-sampling mode.).

Consider claim 18, and as applied to claim 5 above, Umeda et al. further teaches that the first signal transmission method is a sequential scanning method, and the second signal transmission method is a pixel mixture scanning method (The first signal transmission method sequentially outputs all pixel signals and the second signal

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transmission method outputs a pixel mixture of only green pixels, paragraphs 0169, 0171 and 0173.).

Consider claim 19, and as applied to claim 18 above, Umeda et al. further teaches that a static image mode is executed by the sequential scanning method, and a moving image mode is executed by the pixel mixture scanning method (The sub-sampling (i.e. pixel mixture) method is used in video capture mode (i.e. moving image mode), and the all-pixel readout method is used in still image mode, paragraph 0170.).

Consider claim 23, and as applied to claim 5 above, Umeda et al. further teaches the first signal transmission method sequentially outputs all the pixel signals having color filters of the different colors from one another (Selection signals are output to all pixels in the vertical direction, figure 22A, paragraphs 0169 and 0171.).

Consider claim 28, and as applied to claim 5 above, Umeda et al. further teaches:

in the first signal transmission method (all-pixel output mode) of the two signal transmission methods, the shift register outputs the selection signals in number order (Selection signals are sequentially output to all pixels in the vertical direction, figure 22A, paragraphs 0169 and 0171. Figure 11B shows that selection signals are output in number order.), and

in the second signal transmission method (sub-sampling mode) of the two signal transmission methods, the shift register outputs the selection signals, changing the order partially (The order is changed such that selection signals are only sent to green pixels in the vertical direction, figure 22C, paragraphs 0169 and 0173).

Consider claim 29, and as applied to claim 5 above, Umeda et al. further teaches that the second signal transmission method outputs signals of all of the pixels without thinning (All of the pixels output in the second signal transmission method (i.e. the green pixels) are output without thinning (See figures 22C, paragraphs 0169 and 0173-0174.).).

Consider claim 30, and as applied to claim 5 above, Umeda et al. further teaches that the solid state imaging apparatus is a MOS type solid state imaging apparatus ("CMOS", paragraph 0123), and a MOS transistor is used in the shift register (A MOS transistor (65) is used for vertical selection, paragraph 0259, figure 89.).

Consider claim 35, Umeda et al. teaches:

A solid state imaging apparatus (figures 1 and 22A-22C), comprising:

a plurality of pixels arranged two-dimensionally wherein each of the plurality of pixels has a color filter having a different color from color filters of adjacent pixels in a row or a column (See figures 22A-22C);

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a shift register (vertical scanning section, 103, figure 1) for outputting selection signals, which drive each pixel, to a single line pixel group (i.e. a single line group of all pixels in the vertical direction in the all-pixel output mode and a single line group of all green pixels in the vertical direction in the sub-sampling mode) of the plurality of pixels (see paragraphs 0122, 0123 and 0148, figures 11B, 22A and 22C); and

an operation switching circuit (switch circuit, 101e, figure 23) for switching between two signal transmission methods when outputting the selection signals from the shift register to the single line pixel group (The operation switching circuit (101e) controls whether the selection signals are output in an all-pixel output mode or sub-sampling mode, paragraphs 0170 and 0171, figure 23.),

wherein in the first signal transmission method (all-pixel output mode) of the two signal transmission methods, the shift register outputs the selection signals in number order (Selection signals are sequentially output to all pixels in the vertical direction, figure 22A, paragraphs 0169 and 0171. Figure 11B shows that selection signals are output in number order.), and

in the second signal transmission method (sub-sampling mode) of the two signal transmission methods, the shift register outputs the selection signals, changing the order partially (The order is changed such that selection signals are only sent to green pixels in the vertical direction, figure 22C, paragraphs 0169 and 0173).

Consider claim 36, and as applied to claim 35 above, Umeda et al. further teaches that the first signal transmission method (all-pixel output mode) provides a first

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operation outputting all of the pixels included in the single line pixel group (Selection signals are sequentially output to all pixels in the vertical direction, figure 22A, paragraphs 0169 and 0171. Figure 11B shows that selection signals are output in number order.), and

the second signal transmission method (sub-sampling mode) provides a second operation continuously outputting some of the pixels included in the single line pixel group and having color filters of a same color (The order is changed such that selection signals are sent to all pixels in the green pixel group in the vertical direction, figure 22C, paragraphs 0169 and 0173).

Consider claim 37, and as applied to claim 35 above, Umeda et al. further teaches that the second signal transmission method (sub-sampling mode) outputs signals of all of the pixels included in the single line pixel group without thinning (All of the pixels output in the second signal transmission method (i.e. the green pixels) are output without thinning (See figures 22C, paragraphs 0169 and 0173-0174.)).

Consider claim 38, and as applied to claim 35 above, Umeda et al. further teaches that the solid state imaging apparatus is a MOS type solid state imaging apparatus ("CMOS", paragraph 0123), and a MOS transistor is used in the shift register (A MOS transistor (65) is used for vertical selection, paragraph 0259, figure 89.).

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Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umeda et al. in view of Akimoto et al. (US 5,016,108).

Consider claim 21, and as applied to claim 5 above, Umeda et al. teaches that the solid state imaging apparatus is of a MOS type ("CMOS", paragraph 0123).

However, Umeda et al. does not explicitly teach that the operation switching circuit comprises a plurality of MOS transistors selected by a plurality of signal gate lines.

Akimoto et al. similarly teaches of an MOS imager (figure 3, column 3, lines 40-43).

However, in addition to the teachings of Umeda et al., Akimoto et al. teaches that the scanning and selecting of pixel signals involves a plurality of MOS transistors (MOS

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transistor switches, 105, 106, 205, 206, etc.) selected by a plurality of signal gate lines (gate lines, 512, 513), column 3, line 50 through column 4, line 16.

Therefore, it would have been obvious to a person having ordinary skill in the art to include a plurality of MOS transistors selected by a plurality of signal gate lines as taught by Umeda et al. as part of the operation switching circuit taught by Akimoto et al. for the benefit of enabling the scanning of selected signal lines while preventing leakage current, noise and the loss of signal charge (Akimoto et al., column 2, lines 16-27).

Allowable Subject Matter

15. Claim 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record teaches all of the limitation of claim 5 (see above rationale). However, the prior art of record does not teach nor reasonably suggest, as a whole, that the second signal transmission method repeats, after continuously outputting signals of the plurality of pixels having color filters of the same color, an operation which continuously outputs signals of the plurality of pixels having color filters of a different color, on a basis of each pixel mixture unit consisting of a plurality of pixels, and the pixel mixture unit consists of 25 pixels arranged in five rows and five columns.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALBERT H. CUTLER whose telephone number is (571)270-1460. The examiner can normally be reached on Mon-Thu (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC

/Sinh Tran/
Supervisory Patent Examiner, Art Unit 2622